CHAPTER FOUR
Development Alternatives

CHAPTER FOUR - DEVELOPMENT ALTERNATIVES

INTRODUCTION

The objective of this chapter is to identify and evaluate alternative plans for the implementation and development of the facility requirements identified in the previous chapter. These facilities are required to satisfy aviation demand levels for the Cochise County Airport throughout the 20-year planning period. A three-step process has been used to accomplish this task:

* Identify alternatives that will meet the needs for the airport imposed by the forecasts;

* Evaluate each alternative to determine efficiency and the process for implementation;

* Select a preferred alternative that maximizes the return on investment within the context of community/airport objectives.

Based on the analysis of wind speed and direction, a one runway system is adequate for the safe operation of aircraft. However, there are limited times that strong crosswind gusts occur and therefore the closed crosswind runway would be useful to local pilots. This analysis will focus on the needs for primary runway and crosswind runway length.

In identifying alternative ways of meeting the defined facility requirements, the following parameters were used as guidelines:

* To maximize the use of existing facilities while providing suitable airfield flexibility to meet the ultimate demand forecasted;

* To provide facilities in a way that reduces impacts on the environment;

* To plan future airfield alternatives that maintain airfield safety and efficiency;

* Provide for cost-effective phasing of proposed improvements that can be effectively maintained at reasonable cost;

With this background, a range of possible alternative airport development scenarios were identified.

AIRFIELD DEVELOPMENT ALTERNATIVES

Continuing the evaluation process, an examination of specific alternatives was identified and evaluated. Runway development alternatives were identified for comparison. These represent a reasonable range of options available at Cochise County Airport and will determine the most advantageous and cost-effective course of action to be followed. Each scenario is in the following text.

Operational Efficiency

The primary measure of operational efficiency is the capability of an alternative to accommodate the "critical" type aircraft in terms of runway length and maneuverability. Standards for runway length and operational efficiency are identified in FAA Advisory circular 150/5300-13 Change 4, Airport Design, Computer Airport Design Program Model.

Runway Development Alternatives Evaluation

The focus of this section is to evaluate the effects of the various alternatives and thus provide the technical basis necessary for selecting a "preferred" runway development plan for the airport. The alternatives will be subjected to an evaluation that will permit a comparison of the merits and deficiencies of all options under consideration. An evaluation matrix has been prepared to rank the composite rankings of each alternative. Primary factors to be considered for each alternative include extending Runway 3-21 to 6,500' (Basic Transport) or maintain existing length. Scenarios for the crosswind runway include reopening to a full length of 6,100' x 75', maintaining a minimum standard length of 4,200' x 60' or keeping the runway closed.

PRIMARY RUNWAY

The length for the primary runway is determined by the critical aircraft that perform the most operations at the airport. The Beechcraft King Air was identified as the critical aircraft in the previous chapter. Other aircraft that occasionally operate at the airport include the Cessna Citation and the LearJet 35. While the Citation and the LearJet do not have the amount of usage at Cochise County Airport to justify being used as the critical aircraft, it is prudent to examine the impacts if these aircraft were to become the primary users at the airport even beyond the 20-year planning period.

The next airport service level which is needed by business jets is the basic transport category (ARC C-II). The required runway length needed for this category is 6,500' feet. As with all analysis there needs to be emphasis placed on a reasonable level of

development. The following study matrix (Table 4.1) compares the two different runway lengths.

Table 4.1
Primary Runway Matrix Evaluation
Cochise County Airport

4 = Best 1 = Worst	6,500' x 100' Basic Transport (ARC C-II)	6,100' x 75' General Utility (Existing Length) (ARC B-II)
Potential Obstructions	4	4
Accommodates Business Jet Aircraft	4	3
ILS Availability (GPS Only)	4	4
Land/Easement Acquisition	1	3
Taxiing Convenience to Terminal Area	4	4
Site Preparation Requirements	1	4
Environmental Considerations	2	4
Construction Costs	1	4
Maintenance Costs	3	4
Total	24	34
Average	2.67	3.78

Recommended Primary Runway Alternative

The study matrix indicates that the Runway 3-21 length and width should be maintained at its current dimensions. While some larger business jets do operate at Cochise County, the load restrictions placed on them do not hinder the operating capacity of these aircraft. Also, from a cost standpoint, keeping the existing length and width is a better option.

CROSSWIND RUNWAY

Based on activity levels, there will be no need to accommodate the critical aircraft on both runways at the airport. In fact different runways have different critical aircraft using them. The predominant aircraft that would use the crosswind runway would include the Cessna 172 and Beechcraft Bonanza. These aircraft need a crosswind runway because they are more susceptible to crosswinds than larger business type aircraft. The proposed lengths

for the crosswind (shown in table 3.2) include 75% of small airplanes - 4,200 feet, or the existing paved length of 6,100'.

There are three reasonable development options for the crosswind runway at Cochise County. The first option is status quo, crosswind runway stays closed. The second option opens the runway to small airplane standards, and the third matches the primary length, which would require the runway to be widened to 75 feet as well. These options would not include development of non-precision instrument approach procedures. Each option was evaluated in matrix form. Table 4.2 shows the crosswind summary matrix.

Table 4.2
Crosswind Runway Matrix Evaluation
Cochise County Airport

4 = Best 1 = Worst	Crosswind Stays Closed	Open at 4,200' x 60'	Open at 6,100' x 75'
Potential Obstructions	4	4	4
Land/Easement Acquisition	4	4	3
95% Wind @ 10.5 Knots (with Primary)	1	4	4
Accommodates Runway Critical Aircraft	1	4	4
Site Preparation Requirements	4	3	2
Construction Costs	4	3	2
Maintenance Costs	4	3	3
Total	22	25	22
Average	3.14	3.57	3.14

Recommended Crosswind Runway Alternative

It is recommended that a 4,200' length be used by the county for Runway 14-32, based upon the results of the study matrix. There is a recognized need for a crosswind runway by local pilots. Runway 14-32 pavement is old with many cracks and grass, the runway should be maintained as a "turf" runway. The shortened length and turf rating will only allow use by small and light piston aircraft and help keep maintenance costs to periodic mowing.